

# PUMICE AND PUMICITE<sup>1</sup>

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In 2002, pumice and pumicite consumption in the United States was 1.29 million metric tons (Mt), an increase of about 1.6% compared with that of 2001. The increase in consumption was mainly attributed to increased domestic sales, despite a decrease in imports of pumice and pumicite. Domestic production increased by about 3.9%, while imports decreased by about 5%. Exports of 30,000 tons (t) represented an increase of about 11% compared with exports during 2001 (table 1).

The main use for pumice was as an aggregate in lightweight building blocks and assorted building products. Other major applications for pumice and pumicite included abrasives, absorbents, concrete aggregate and admixture, filter aids, horticulture (including landscaping), and the stonewashing of denim. Imports were consumed primarily as a lightweight aggregate, but a small percentage of pumice imports was used as abrasive.

## Production

Pumice and pumicite sold or used by U.S. producers increased to 956,000 t valued at \$19.8 million. Oregon remained the leading source of pumice and pumicite followed, in descending order, by Arizona, New Mexico, California, Idaho, and Kansas. Domestic production data for pumice and pumicite were developed by the U.S. Geological Survey (USGS) from a voluntary survey of U.S. operations. In 2002, 15 companies with 17 active operations produced and sold or used all the domestic pumice and pumicite in the United States. Because seven of the companies did not respond to the 2002 survey, sold and used data for these companies were estimated. The eight companies that responded represented about 74% of the 956,000 t sold or used.

Domestic producers, listed alphabetically by State, were Superlite Block, Inc., Flagstaff, AZ; Tufflite Inc., Phoenix, AZ; California Industrial Minerals Co., Friant, CA; California Lightweight Pumice, Inc., San Clemente, CA; Glass Mountain Pumice Inc., Tulelake, CA; U.S. Pumice Co., Chatsworth, CA; Amcor Precast, Inc., and Producers Pumice, Idaho Falls, ID; Hess Pumice Products, Inc., Malad City, ID; Calvert Corp., Norton, KS; Kansas Minerals Inc., Mankato, KS; Copar Pumice Co. Inc., Espanola, NM; CR Minerals Corp., Santa Fe, NM; Utility Block Co., Albuquerque, NM; Cascade Pumice Co., Bend, OR; and Sierra Cascade LLC, Chemult, OR.

## Consumption

The amount of pumice and pumicite sold or used by U.S. producers rose in 2002 because of increased demand from the abrasives, building block, horticultural, landscaping, and laundries (stonewashing) markets (table 2). The amount of pumice sold for building block increased by about 12% to 730,000 t from 651,000 t. Sales of domestic stonewashing (or laundry) pumice increased for the first time since 1997, more than doubling to 12,000 t. The only major market that had decreased sales was for concrete admixture and aggregate, which decreased by 79% to 24,000 t.

The most important market for pumice remained building block, which consumed about 76.4% of the total domestically produced pumice sold or used in the United States. Other important uses were for horticulture and landscaping (15.2%), abrasives (3.0%), and concrete admixture and aggregate (2.5%). The remaining pumice and pumicite (2.9%) was used as absorbent (including pet litter), diluent, engineered fill, filter aids, in laundries, in pottery clays, and for other unspecified uses.

## Prices

The average prices reported for pumice and pumicite varied greatly by use compared with the average price for all uses in 2002. The overall average price was \$20.69 per metric ton in 2002, a decrease of \$0.75 from \$21.44 per ton in 2001. The price change was the result of a decrease in the average price reported for the grades of pumice used in abrasives, building block, horticulture, and landscaping. Average prices for pumice and pumicite by use, in descending order, were \$203 per ton for abrasive, \$56 per ton for stonewashing, \$43 per ton for miscellaneous uses, \$38 per ton for concrete admixture and aggregate, \$24 per ton for horticulture and landscaping, and \$11 per ton for building block.

## Foreign Trade

Exports of pumice increased to about 30,000 t with a value of \$11 million. Importing countries were led, in descending order, by Canada (28%), Mexico (15%), Japan (11%), Malaysia (11%), Germany (8%), the United Kingdom (5%), and Taiwan (4%). The remaining 18% of exports went to 31 other countries in Asia, Central America, Europe, the Middle East, Oceania, and South America.

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<sup>1</sup>Corrected October 2, 2003.

By volume, most imports of pumice and pumicite were for construction-related uses with smaller amounts used for abrasives and stonewashing. Greece remained the largest source of pumice imports, supplying more than 63% (table 3). Imports in 2002 decreased by about 5% to 360,000 t compared with 2001. Imports from Greece fell by 25% to 228,000 t, while imports from Italy increased by 85% to 115,000 t compared with those of 2001. Imports from Greece and Italy were believed to have been shipped to the United States by a single company. In 2002, imports from Turkey increased, while imports from Mexico were unchanged compared with those in 2001. In addition to these countries, 16 other countries exported pumice and pumicite to the United States in 2002.

## **World Review**

The USGS estimated world pumice (and related materials) production to be 13.2 Mt in 2002, about the same as in 2001 (table 4). Most of the data published were provided by official government agencies in each country. Large revisions of data are sometimes reported by these agencies, usually without supporting explanations. Italy remained the dominant producer of pumice and pozzolan, with production estimated to be 4.6 million metric tons per year. Other leading countries in the production of pumice and related materials were Algeria, Chile, Ecuador, France, Germany, Greece, Guatemala, Iran, Spain, Turkey, and the United States. In addition, at least 21 other countries produced pumice.

Pumice is used more extensively outside of the United States, which helps to explain the large global production and sales of pumice. In Europe, for example, basic home construction uses significantly less gypsum sheetrock, stone and concrete being the preferred building materials. Prefabricated lightweight concrete walls often are produced and shipped to construction locations. Because of its lightweight, strength, and cementitious properties, pumice performs very well in the European style of construction.

## **Outlook**

U.S. consumption of pumice and pumicite in 2003 should remain at about 2002 levels, as construction activity, the dominant U.S. use for pumice, is expected to be about the same as in 2002. Imports and exports are expected to be unchanged in 2003.

## **GENERAL SOURCES OF INFORMATION**

### **U.S. Geological Survey Publications**

Lightweight Aggregates. Ch. in *United States Mineral Resources*, Professional Paper 820, 1973.

Pumice and Pumicite. Ch. in *Mineral Commodity Summaries*, annual.

### **Other**

Bates, R.L., 1969, *Geology of the industrial rocks and minerals*: New York, NY, Dover Publications Inc., p. 39-50.  
*Industrial Minerals Magazine*.

TABLE 1  
SALIENT PUMICE AND PUMICITE STATISTICS<sup>1</sup>

(Thousand metric tons and thousand dollars, unless otherwise specified)

	1998	1999	2000	2001	2002
United States, sold and used by producers:					
Pumice and pumicite	872 <sup>r</sup>	1,000 <sup>r</sup>	1,050 <sup>r</sup>	920 <sup>r</sup>	956
Value <sup>2</sup>	\$14,200 <sup>r</sup>	\$19,800 <sup>r</sup>	\$18,900 <sup>r</sup>	\$19,700 <sup>r</sup>	\$19,800
Average value per ton	16 <sup>r</sup>	20 <sup>r</sup>	18 <sup>r</sup>	21 <sup>r</sup>	21
Exports <sup>e</sup>	22	23	27	27	30
Imports for consumption	288	354	385	379	360
Apparent consumption <sup>3</sup>	1,140 <sup>r</sup>	1,330 <sup>r</sup>	1,410 <sup>r</sup>	1,270 <sup>r</sup>	1,290
World, production, pumice and related volcanic materials	12,800 <sup>r</sup>	13,100 <sup>r</sup>	13,100 <sup>r</sup>	13,300 <sup>r</sup>	13,200 <sup>e</sup>

<sup>e</sup>Estimated. <sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits, except average value per ton.

<sup>2</sup>Free on board mine and/or mill.

<sup>3</sup>Production plus imports minus exports plus adjustments for Government and industry stock changes.

TABLE 2  
PUMICE AND PUMICITE SOLD AND USED BY PRODUCERS IN THE UNITED STATES, BY USE <sup>1</sup>

Use	2001			2002		
	Quantity (thousand metric tons)	Value (thousands)	Average unit value	Quantity (thousand metric tons)	Value (thousands)	Average unit value
Abrasives <sup>2</sup>	21	\$5,810	\$276.52	29	\$5,880	\$202.59
Building block, includes decorative	651 <sup>r</sup>	7,430 <sup>r</sup>	11.41 <sup>r</sup>	730	8,170	11.18
Concrete admixture and aggregate	116	2,200	18.96	24	908	37.83
Horticulture and landscaping	90	3,050	33.88	145	3,500	24.17
Laundries	5	271	54.20	12	672	56.00
Other <sup>3</sup>	37	949	25.65	15	652	43.47
Total	920 <sup>r</sup>	19,700 <sup>r</sup>	21.42 <sup>r</sup>	956	19,800	20.69

<sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits, except average unit value; may not add to totals shown.

<sup>2</sup>Includes cleaning and scouring compounds.

<sup>3</sup>Includes absorbent, diluents, fill, filter aids, pottery, and other unspecified uses.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF PUMICE,  
BY CLASS AND COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Country	Crude or unmanufactured		Wholly or partly manufactured	
	Quantity	Value	Quantity	Value
2001:				
Greece <sup>2</sup>	304	5,910	(3)	430
Italy	62	2,840	(3)	152
Mexico	(3)	33	(3)	12
Turkey	12	2,130	--	--
Other <sup>4</sup>	(3)	89	(3)	1,780
Total	378	11,000	1	2,370
2002:				
Greece <sup>2</sup>	228	8,340	(3)	838
Italy <sup>2</sup>	115	7,880	(3)	485
Mexico	(3)	46	--	--
Turkey	16	6,400	(3)	35
Other <sup>5</sup>	(3)	176	(3)	1,840
Total	359	22,800	1	3,200

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>The Journal of Commerce Port Import/Export Reporting Service data.

<sup>3</sup>Less than 1/2 unit.

<sup>4</sup>Includes Austria, Canada, China, Ecuador, France, Germany, Iceland, Japan, the Republic of Korea, the Philippines, Poland, Switzerland, Taiwan, and the United Kingdom.

<sup>5</sup>Includes Austria, Canada, China, Ecuador, France, Germany, Ghana, Hong Kong, Japan, the Republic of Korea, the Netherlands, the Philippines, Poland, South Africa, Sweden, Taiwan, and the United Kingdom.

Source: U.S. Census Bureau.

TABLE 4  
PUMICE AND RELATED MATERIALS: WORLD PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Metric tons)

Country <sup>3</sup>	1998	1999	2000	2001	2002 <sup>c</sup>
Algeria, pozzolan	300,000 <sup>e</sup>	394,000	400,000 <sup>e</sup>	421,238	400,000
Argentina, pumice	18,000	17,662	16,000 <sup>e</sup>	14,306 <sup>r</sup>	12,160 <sup>p, 4</sup>
Austria, trass <sup>c</sup>	5,000	5,000	5,000	5,000	5,000
Burkina Faso <sup>c</sup>	10,000	10,000	10,000	10,000	10,000
Cameroon, pozzolan	81,600 <sup>r</sup>	90,410 <sup>r</sup>	86,384 <sup>r</sup>	80,500 <sup>r</sup>	80,000
Cape Verde, pozzolan <sup>c</sup>	1,000	1,000	1,000	1,000	1,000
Chile, pumice and pozzolan	912,000	958,000	830,000	785,000 <sup>r</sup>	750,000
Costa Rica <sup>c</sup>	8,000	8,000	8,000	8,000	8,000
Croatia, volcanic tuff	38,000	55,000	38,000	35,000 <sup>e</sup>	35,000
Dominica, pumice and volcanic ash <sup>c</sup>	100,000	100,000	100,000	100,000	100,000
Ecuador:					
Pumice	320,000	275,274	344,850 <sup>r</sup>	275,880 <sup>r</sup>	276,000
Pozzolan	80,000 <sup>e</sup>	70,000 <sup>e</sup>	27,687 <sup>r</sup>	22,149 <sup>r</sup>	22,200
Eritrea, pumice	391	153	41	50 <sup>r, e</sup>	60
Ethiopia <sup>5</sup>	325,000 <sup>e</sup>	135,400	156,466	169,000 <sup>e</sup>	170,000
France, pozzolan and lapilli <sup>c</sup>	460,000	460,000	450,000	450,000	450,000
Germany, pumice (marketable) <sup>c</sup>	600,000	500,000	500,000	500,000	500,000
Greece: <sup>c</sup>					
Pumice	900,000	900,000	850,000	850,000	850,000
Pozzolan	850,000	800,000	750,000	750,000	750,000
Guadeloupe, pumice <sup>c</sup>	210,000	210,000	210,000	210,000	210,000
Guatemala, pumice	81,513 <sup>r</sup>	233,425 <sup>r</sup>	261,947 <sup>r</sup>	262,000 <sup>r</sup>	262,000
Honduras, pozzolan	--	--	186,948	189,999	190,000
Iceland: <sup>c</sup>					
Pumice	25,000	25,000	25,000	25,000	25,000
Scoria	500	500	500	500	500
Iran <sup>e</sup>	150,000	150,000	150,000	700,000 <sup>r</sup>	700,000
Italy: <sup>c</sup>					
Pumice and pumiceous lapilli	600,000	600,000	600,000	600,000	600,000
Pozzolan	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Macedonia, volcanic tuff <sup>c</sup>	75,000	70,000	60,000	60,000	60,000
Martinique, pumice <sup>c</sup>	130,000	130,000	130,000	130,000	130,000
New Zealand	190,000 <sup>e</sup>	124,300 <sup>r</sup>	68,000 <sup>r</sup>	68,000 <sup>r, e</sup>	70,000
Saudi Arabia, pozzolan <sup>c</sup>	145,000	140,000	150,000	150,000	150,000
Serbia and Montenegro, volcanic tuff <sup>c</sup>	75,000	70,000	70,000	70,000	65,000
Slovenia, volcanic tuff <sup>c</sup>	40,000	40,000	40,000	40,000	40,000
Spain, including Canary Islands <sup>c</sup>	600,000	600,000	600,000	600,000	600,000
Tanzania, pozzolanic materials	--	2,274	57,014	41,468	42,000
Turkey	579,000	950,189	787,081	700,000 <sup>r, e</sup>	700,000
Uganda, pozzolanic materials	NA	20,213	35,603	22,782 <sup>r</sup>	25,000
United States, pumice, sold and used by producers	872,000 <sup>r</sup>	998,000 <sup>r</sup>	1,050,000 <sup>r</sup>	919,000 <sup>r</sup>	956,000 <sup>4</sup>
Grand total	12,800,000 <sup>r</sup>	13,100,000 <sup>r</sup>	13,100,000 <sup>r</sup>	13,300,000 <sup>r</sup>	13,200,000
Of which:					
Pumice	3,160,000 <sup>r</sup>	3,290,000 <sup>r</sup>	3,390,000 <sup>r</sup>	3,190,000 <sup>r</sup>	3,220,000
Pozzolan	5,460,000 <sup>r</sup>	5,520,000 <sup>r</sup>	5,690,000 <sup>r</sup>	5,680,000 <sup>r</sup>	5,660,000
Trass and scoria	5,500	5,500	5,500	5,500	5,500
Volcanic tuff	228,000	235,000	208,000	205,000	200,000
Unspecified	3,930,000	4,100,000 <sup>r</sup>	3,760,000 <sup>r</sup>	4,190,000	4,160,000

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. NA Not available. -- Zero.

<sup>1</sup>World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Table includes data available through April 29, 2003.

<sup>3</sup>Pumice and related materials also are produced in a number of other countries, including Japan, Mexico, and countries of the Commonwealth of Independent States; available information is inadequate for the formulation of reliable estimates of output levels

<sup>4</sup>Reported figure.

<sup>5</sup>Data are for year ending July 7 of the year stated.